



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/781,638	02/12/2001	Suraj C. Kothari	900.174US1	8399

21186 7590 03/01/2004

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. BOX 2938  
MINNEAPOLIS, MN 55402

EXAMINER

DAS, CHAMELI

ART UNIT	PAPER NUMBER
----------	--------------

2122

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/781,638

Applicant(s)

KOTHARI ET AL.

Examiner

C.DAS

Art Unit

2122

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-94 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-94 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. Claims 1- 94 are pending.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7, 9, 18-28, 30, 39-49, 51, 60-63, 65 are rejected under 35

U.S.C. 102(b) as being anticipated by Clark, US 5,297,150.

***As per claims 1, 22 Clark discloses:***

- analyzing source code to determine a program slice (Clark, col 6 lines 47-67)

- creating a program slice diagram that provides a graphical representation of the program slice (Clark, col 5 lines 9-16, col 5 lines 33-36)

- displaying the program slice program (col 5 lines 9-16, col 6 lines 38-45).

***As per claims 2, 23, 44, Clark discloses:***

- wherein the program slice program further comprises a directed graph comprising a plurality of nodes and arcs (Abstract, 1-10, col 4 lines 20-25).

***As per claims 3, 24, 45, Clark discloses:***

- wherein the arcs represent data flow dependencies between the nodes (Abstract, 1-10, col 4 lines 20-25).

***As per claim 4, 25, 46, Clark discloses:***

- wherein the nodes represent source code statements within a selected subroutine (Abstract, col 6 lines 46-52).

***As per claims 5, 26, 47, Clark discloses:***

- wherein the node represent variable... subroutine (col 7 lines 10-15).

***As per claims 6, 27, 48, Clark discloses:***

- wherein the nodes represent class made to subroutines (col 4 lines 62-67, col 5 lines 17-20).

***As per claims 7, 28, 49, Clark discloses:***

labeling the archs with variable names (col 5 lines 4-6, col 7 lines 10-40).

***Regarding claims 9, 30, 51, (Clark, Fig 6).***

***Regarding claims 18, 39, 60, (Clark, Fig 3, item 52).***

***Regarding claims 19, 40, 61, (Clark, col 7 lines 10-15).***

***Regarding claims 20, 41, 62, (Clark, Fig 3, item 56).***

***Regarding claims 21, 42, 63, (Clark, Fig 6 and col 5 lines 9-16, col 6 lines 38-45).***

***Regarding claim 43, (Clark, col 3 lines 64 – 68, col 4 lines 1-10, col ) for the rest of the limitations see the rejection of claim 1 above.***

***Regarding claim 65, (Clark, col 4 lines 25-30, col 6 lines 33-45, col 5 lines 5-15 and col 6 lines 13-20), where the procedure selects a search technique and move the procedures inherently including read and write access as claimed.***

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10, 15-16, 31, 36-37, 52, 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark, US 5,297,150

A per claims **10, 31, 52**, Clark does not specifically disclose that the diagram is displayed in upside-down-tree layout. However official notice is taken for displaying upside-down-tree. The modification would be obvious because one of the ordinary skill in the art would be motivated to search the nodes of the tree efficiently.

**As per claims 15, 36, 57** Clark does not specifically disclose panning the program slice diagram. However official notice is taken in panning the diagram. The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a clear view of the graphical representation.

**As per claims 16, 37, 58** Clark does not specifically disclose zooming the program slice diagram. However official notice is taken in zooming the diagram. The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a clear view of the graphical representation.

5. Claims 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Clark, US 5,297,150 and further in view of the background section of the Clark's reference

**As per claim 66**, Clark discloses navigates through the source code (col 7 lines 65-67). Clark discloses that each source statement is expressed as nodes and the source statement includes a variable (Clark, col 7 lines 10-15). Clark does not specifically disclose highlighting. However, the background section of the Clark discloses highlighting the statement of the source code (Clark, col 2 lines 4-6). The modification would be obvious because one of the ordinary skill in the art would be motivated to indicate how frequently each statement is exercised during simulation.

6. Claims 8, 11, 17, 29, 32, 38, 50, 53, 59, 64, 69, 70-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark, US 5,297,150 and further in view of Van Dyke et al (Van), US 5,175,856.

**As per claims 8, 17, 29, 38, 50, 59**, Clark does not specifically disclose pruning the program slice. However, Van discloses pruning the program slice (Van, col 11 lines 63-65), where the expressions are nodes (col 6 lines 47-55). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide the optimizations for the entire procedures.

**As per claims 11, 32, 53, Clark does not specifically disclose performing semantic** abstraction as claimed. However, Van discloses performing semantic abstraction as claimed (col 15 lines 60-64). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a method of efficient analysis of the program.

**Regarding claim 64, (Clark col 6 lines 33-50, col 5 lines 32-37, col 4 lines 57-64).** **Clark does not specifically disclose performing semantic** abstraction as claimed. However, Van discloses performing semantic abstraction as claimed (col 15 lines 60-64). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a method of efficient analysis of the program.

**Regarding claim 69, (Clark, col 4 lines 57-65, col 5 lines 35-37).**

**Regarding claim 70, (Clark col 7 lines 35-37).**

**Regarding claim 71, (Van, col 12 lines 19-20),** line statements inherently including beginning and ending line numbers as claimed, a list of variables ... each block (Van, col 6 lines 47-55).

7. Claims 12-14, 33-35, 54-56, 67-68, 72-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark, US 5,297,150 further in view of Van Dyke et al (Van), US 5,175,856 and Sato, US 5,819,094.

**As per claims 12 and 13, 33, 34, 54, 55,** Clark discloses identifying a logical category of computations (Clark, col 5 lines 25-35) and displaying the logical category of computations as claimed (col 6 lines 5-10, col 6 lines 33-45).

Neither Clark nor Van disclose cross-reference to a source code. However, Sato discloses cross-reference to a source code (Sato, col 4 lines 51-55, col 5 lines 39-43, col 7 lines 55-62, col 8 lines 25-30). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a method of efficient analysis of the program.

**As per claim 68**, (Sato, col 4 lines 51-55, col 5 lines 39-43, col 7 lines 55-62, col 8 lines 25-30).

**Regarding claim 72**, (Sato, col 9 lines 59-64). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a view the range of the diagram displayed on a screen to allow a desired section in the program to be focused on.

**Regarding claim 73**, (Clark, (Abstract, 1-10, col 4 lines 20-25).

**For claim 74**, see the rejection of claim 4.

**For claim 75**, see the rejection of claim 5.

**For claim 76**, see the rejection of claim 6.

**For claim 77**, (Clark, Fig 6, col 6 lines 35-50).

**For claim 78**, see the rejection of claim 8.

**Regarding claim 79**, official notice is taken for width, height and spread factor. The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a view the range of the diagram displayed on a screen to allow a desired section in the program to be focused on.

**Regarding claim 80**, official notice is taken for highlighting edges emanating from a user selected node. The modification would be obvious because one of the ordinary skill in the art would be motivated to provide a view the range of the diagram displayed on a screen to allow a desired section in the program to be focused on.

**Regarding claim 81**, (Clark, Abstract, 1-10, col 4 lines 20-25).

**Regarding claim 82**, (Clark, col 5 lines 1-15, col 7 lines 15-20).

**As per claims 14, 35, 56,** Clark discloses to rank each nodes in an order in response to a user request (col 6 lines 18-20). Clark does not specifically disclose to rearrange the program slice diagram. However, Van discloses to rearrange the program slice diagram (Van, col 5 lines 5-10). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide the optimizations for the entire procedures.

**As per claim 67,** Clark does not specifically disclose displays a list of all scalar and array variables and displays indexing patterns ... array variable from the list. However Van discloses disclose displays a list of all scalar and array variables and displays indexing patterns ... array variable from the list (Van, col 60-65, col 15 lines 23-25, col 18 lines 44-50, col 16 lines 58-65, col 17 lines 15-25). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide the optimizations for the entire procedures.

8. Claims 83-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clark, US 5,297,150 further in view of Van Dyke et al (Van), US 5,175,856 and Sato, US 5,819,094, Palmon, US 57,40,421.

**Regarding claim 83,** (Palmon, col 13 lines 35-50). The modification would be obvious because one of the ordinary skill in the art would be motivated to provide the optimizations for the entire procedures.

**For claim 84,** see the rejection of claim 11 above.

**For claim 85,** see the rejection of claim 71 above.

Art Unit: 2122

**For claim 86,** (Clark, col 7 lines 10-20).

**For claim 87** see the rejection of claim 2 and 3.

**For claim 88,** (Van col 15 lines 60-64), official notice is taken for the domain specific. The modification would be obvious because one of the ordinary skill in the art would be motivated to provide an efficient method for analyzing the program.

**For claim 89,** (Van col 15 lines 60-64).

**For claim 90, 91** see the rejection of claim 12.

**For claim 92** (Clark, col 5 lines 25-35) and ( Van, col 16 lines 30-40).

**For claim 93,** (Clark, col 5 lines 9-16, col 15 lines 33-36, col 4 lines 60-67), (Van, col 15 lines 60-64), (Sato, col 4 lines 51-55, col 5 lines 39-43).

**For claim 94,** (Sato, abstract, lines 1-12). The modification would be obvious because one of the ordinary skill in the art would be motivated to understand total operating conditions of programs.

10. The prior art made or record and not relied upon is considered pertinent to applicant's disclosure.

TITLE: Debugger program which includes correlation of computer program source code with optimized object code, US 5371747 A

TITLE: Loop allocation for optimizing compilers, US 6651246 B1

TITLE: Data processing system intended for the execution of programs in the form of search trees, so-called or parallel execution, US 4949243 A

TITLE: Method of using primary and secondary processors, US 6219833 B1

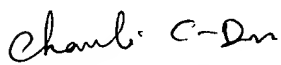
Art Unit: 2122

TITLE: System for compiling parallel communications instructions including their embedded data transfer information, US 5355492 A

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chameli Das whose telephone number is 703-305-1339.

The examiner can normally be reached on Monday-Friday from 7:00 A.M. to 3:30 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Tuan Dam can be reached at 703-305-4552. The fax number for this group is (703) 872-9306.

An inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is 703-305-9600.

  
CHAMELI C. DAS  
PRIMARY EXAMINER

Art Unit 2122

2/27/04